

CLAIMS

1. A host comprising:
  2. a processor;
  3. a host memory coupled to said processor; and
  4. a host-fabric adapter coupled to said processor and provided to interface with a switched fabric including one or more fabric-attached I/O controllers, the host-fabric adapter including
    - 5.
    6. logic for accessing a translation and protection table from said host memory for a data transaction, said translation and protection table including a plurality of translation entries and at least one region entry, said at least one region entry comprising multiple levels of translation entries.
    - 7.
    - 8.
    - 9.
1. The host as claimed in claim 1, wherein each of said plurality of translation entries comprises an entry type field to distinguish between one of said translation entries and said at least one region entry, and said at least one region entry comprises an entry type field to distinguish between one of said translation entries and said at least one region entry.
1. .... 3. The host as claimed in claim 1, wherein said at least one region entry corresponds to a specific region comprising said multiple levels of translation entries within said translation and protection table.

1           4. The host as claimed in claim 1, wherein said at least one region entry comprises a  
2 key field to validate a key entry that indexes said at least one region entry.

1           5. The host as claimed in claim 1, wherein said at least one region entry comprises a  
2 translation handle field to determine said translation entry that contains desired page information.

1           6. The host as claimed in claim 1, wherein said at least one region entry comprises a  
2 region type field to distinguish between a plurality of types of regions.

1           7. The host as claimed in claim 6, wherein said plurality of types of regions comprises  
2 a window region type and a window extension entry type, each window region type being  
3 associated with a first window extension entry type and a second window extension entry type.

1           8. The host as claimed in claim 7, wherein data within said first window extension entry  
2 type and said second extension entry type relate to a starting address of a mapped region and a  
3 length of said mapped region.

1           9. The host as claimed in claim 1, wherein said host-fabric adapter performs virtual to  
2 physical address translation and validates access to said host memory using entries in said  
3 translation and protection table.

1           10. A network comprising:  
2           a switched fabric;  
3           I/O controllers coupled to said switched fabric; and  
4           a host comprising an operating system, a host memory, and a host-fabric adapter to access  
5           a translation and protection table from said host memory for a data transaction, said translation  
6           and protection table including a plurality of translation entries and at least one region entry, said at  
7           least one region entry comprising multiple levels of translation entries.

1           11. The network as claimed in claim 10, wherein each of said translation entries  
2           comprises an entry type field to distinguish between one of said translation entries and said at least  
3           one region entry, and said at least one region entry comprises an entry type field to distinguish  
4           between one of said translation entries and said at least one region entry.

1           12. The network as claimed in claim 10, wherein said at least one region entry  
2           corresponds to a specific region comprising said multiple levels of translation entries within said  
3           translation and protection table.

1           13. The network as claimed in claim 10, wherein said at least one region entry  
2           comprises a key field to validate a key entry that indexes said at least one region entry.

1           14. The network as claimed in claim 10, wherein said at least one region entry  
2           comprises a region type field to distinguish between a plurality of types of regions.

1           15. The network as claimed in claim 14, wherein said plurality of types of regions  
2           comprises a window region type and a window extension entry type, each window region type  
3           being associated with a first window extension entry type and a second window extension entry  
4           type.

1           16. The network as claimed in claim 15, wherein data within said first window  
2           extension entry type and said second extension entry type relate to a starting address of a mapped  
3           region and a length of said mapped region.

1           17. An apparatus that stores translation and protection table entries for virtual to  
2           physical address translations, and that validates access requests for individual translation and  
3           protection table entries, said translation and protection table to comprise a plurality of translation  
4           entries and at least one region entry, said at least one region entry to comprise multiple levels of  
5           translation entries.

1           18. The apparatus of claim 17, wherein each of said plurality of translation entries  
2           comprises an entry type field to distinguish between one of said translation entries and said at least

3        one region entry, said at least one region entry comprising an entry type field to distinguish  
4        between said plurality of translation entries and said at least one region entry.

1              19.     The apparatus of claim 17, wherein said at least one region entry comprises a key  
2        field to validate a key entry that indexes said at least one region entry.

1              20.     The apparatus of claim 17, wherein said at least one region entry comprises a  
2        region type field to distinguish between a plurality of types of regions.

1              21.     The apparatus of claim 20, wherein said plurality of types of regions comprises a  
2        window region entry type and a window extension entry type, each window region type being  
3        associated with a first window extension entry and a second window extension entry.

1              22.     The apparatus of claim 21, wherein data within said first window extension entry  
2        type and said second extension entry type relate to a starting address of a mapped region and a  
3        length of said mapped region.

1              23.     A host-fabric adapter coupled to a processor and provided to interface with a  
2        switched fabric, the host-fabric adapter including logic for accessing a translation and protection  
3        table from a memory for a data transaction, the translation and protection table including a

4       plurality of translation entries and at least one region entry, said at least one region entry  
5       comprises multiple levels of translation entries.

1           24.     The host-fabric adapter of claim 23, wherein said plurality of translation entries  
2       comprises an entry type field to distinguish between one of said translation entries and said at least  
3       one region entry, and said at least one region entry comprises an entry type field to distinguish  
4       between one of said translation entries and said at least one region entry.

1           25.     The host-fabric adapter of claim 23, wherein said at least one region entry  
2       comprises a key field to validate a key entry that indexes said at least one region entry.

1           26.     The host-fabric adapter of claim 23, wherein said at least one region entry  
2       comprises a region type field to distinguish between a plurality of types of regions.

1           27.     A method of validating an access request to a host, said host being coupled to a  
2       switched fabric and including a processor, a host memory coupled to the processor and a host-  
3       fabric adapter coupled to the processor and provided to interface with the switched fabric, the  
4       method comprising:

5               accessing a translation and protection table from said host memory for a data transaction,  
6       said translation and protection table including a plurality of translation entries and at least one  
7       region entry, said at least one region entry comprising multiple levels of translation entries;

8 receiving a key entry that indexes one of said translation entry and said region entry; and  
9 comparing a key field in said one of said translation entries and said region entry to  
10 validate access.

1 28. The method of claim 27, wherein each of said plurality of translation entries  
2 comprises an entry type field to distinguish between one of said translation entries and said at least  
3 one region entry, and said at least one region entry comprises an entry type field to distinguish  
4 between one of said translation entries and said at least one region entry.

1 29. The method of claim 27, wherein said at least one region entry comprises a region  
2 type field to distinguish between a plurality of types of regions.

1 30. The method of claim 29, wherein said plurality of types of regions comprises a  
2 window region type and a window extension entry type, each window region type being  
3 associated with a first window extension entry type and a second window extension entry type.